

SCIENCE AND TECHNOLOGY  
COMMITTEE

THE DIRECTOR GENERAL OF THE  
RESEARCH COUNCILS

MINUTES OF EVIDENCE

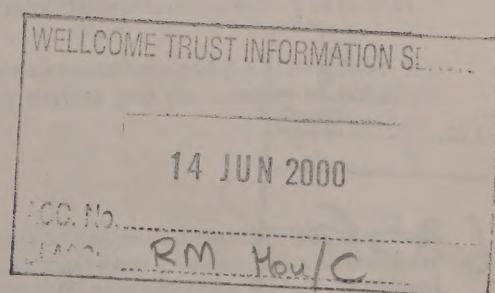
Wednesday 8 December 1999

*THE OFFICE OF SCIENCE AND TECHNOLOGY*  
*Dr John Taylor OBE and Mr Martin Earwicker*

---

*Ordered by The House of Commons to be printed*  
*8 December 1999*

---



LONDON : THE STATIONERY OFFICE

£4.75

LIBRARY

LIBRARY
Local Collections
P
6356



22501533846

# MINUTES OF EVIDENCE

TAKEN BEFORE THE SCIENCE AND TECHNOLOGY COMMITTEE

WEDNESDAY 8 DECEMBER 1999

Members present:

Dr Michael Clark, in the Chair

Mr Nigel Beard  
Mrs Claire Curtis-Thomas  
Dr Ian Gibson  
Mr Robert Jackson  
Dr Lynne Jones

Dr Ashok Kumar  
Mr Ian Taylor  
Dr Desmond Turner  
Dr Alan W Williams

## Letter to the Clerk of the Committee from Dr John Taylor, OBE, Director General of the Research Councils

I am pleased to have the opportunity to update the House of Commons Select Committee on Science and Technology on topics within the Office of Science and Technology.

As requested I am providing you with some background information on the funding arrangements for the new synchrotron project and an update on the Joint Infra-structure Fund (JIF). I will be happy to provide more detail on the 8th December.

## Synchrotron

The synchrotron is a tool for generating high intensity X-rays to study the structure of complex molecules in the physical and life sciences. The 1993 Wolfson Report confirmed the need for a new, third generation synchrotron in the UK to replace the existing synchrotron (the SRS) which is now nearing the end of its useful life. The Central Laboratory of the Research Councils (CLRC) developed a design (known as DIAMOND) for such a machine. A new synchrotron was identified as a priority in the 1997 CSR, in particular to facilitate the exploitation of the huge volume of information emerging from genome mapping.

The requirements for the synchrotron were determined by two user consultations in early 1999. They concluded that a machine with an energy of around 3GeV (3-3.5GeV) was required to meet the main UK needs.

The original machine design was for a 16-cell, 3GeV machine to satisfy primarily the needs of the UK Research Councils, as a replacement for the current synchrotron. Following the announcement in July 1998 that the Wellcome Trust wished to join the project with a contribution of £110 million, the machine capacity was increased to a 20 cell 3GeV machine. In August 1999, the French Government confirmed that they wished to join the project and the size of the machine is currently under discussion, but it may result in a 24-cell machine being required. This will be finalised following further consultations with the users and discussions with the French and Wellcome Trust.

The total capital cost of a 20-cell machine with a total of 28 beamlines is approximately £175 million and total lifetime costs (capital plus running costs) are approximately £550m.

The Wellcome Trust contribution will be approximately one sixth of the synchrotron facility as their £110 million includes the cost for an additional laboratory.

The OST will contribute approximately £300 million with the French contributing about £160 million. The final cost will depend on the number of cells required by each partner and the number of beamlines constructed.

## Joint Infra-structure Fund

The Secretary of State will announce the 45 successful applicants to the second round of JIF in a press conference at the Wellcome Trust on Tuesday, 7 December. The exact amounts given to each university are subject to negotiation and may not be known for several weeks. The provisional total for Round 2 is around £320 million, just over £190 million from the Government (OST and HEPCE) and the balance from the Wellcome Trust.

The JIF fund of £750 million (£300 million from OST, £300 million from the Wellcome Trust and £150 million from HEPCE) is being distributed across five rounds.

— In the first round, announced in May 1999, 37 awards were made totalling £152 million.

8 December 1999]

[Continued

- Round 2 to be announced December 1999 totals £320 million.
- There is about £280 million left for the final three rounds and Round Three winners will be announced in March 2000.

The projects awarded funding cover the broad spectrum of the sciences—the biomedical, physical and social sciences, and engineering.

6 December 1999.

### Examination of Witnesses

DR JOHN TAYLOR, OBE, Director General of the Research Councils and MR MARTIN EARWICKER, Head of Science and Engineering Base Group, Office of Science and Technology, were examined.

#### Chairman

1. Order, order. Dr Taylor, Mr Earwicker, welcome to this Select Committee this afternoon and thank you for coming to help us with our brief inquiry into the Synchrotron. Dr Taylor, you are no stranger to this Select Committee and we welcome you again and thank you for the help we know you will give us, but even though we know you, would you, just for the record, care to introduce yourself and also introduce Mr Earwicker or invite him to introduce himself because he is a visitor for the first time, welcome though he is?

(Dr Taylor) Thank you very much, Mr Chairman. I am Dr John Taylor; thank you for the promotion, but I am actually only OBE. I am Director General of the Research Councils since January of this year and my colleague is Mr Martin Earwicker.

(Mr Earwicker) I am Martin Earwicker. I am Head of the Science and Engineering Base Group at the OST and I have held that job since August this year.

2. Thank you very much indeed. Our questions this afternoon will fall into two parts. The first part and the biggest part will be the Synchrotron and the second and smaller part will be the Joint Infrastructure Fund and we will pause at that stage and invite you to say something about the Fund before we go into questions. There is no point in doing it now; I think it would be better just before the questions start. If I may start, Dr Taylor, by asking you when you think the announcement will be made on the location of the new Synchrotron?

(Dr Taylor) I think as you will have seen from the answer to the Parliamentary Question by the Secretary of State, he says it is his intention to announce a decision in January, I think in mid-January is probably the time he is aiming for.

3. We do have to wonder why this decision has taken so long, particularly bearing in mind the fact that, when we asked for evidence on this, we got a whole lot of evidence from interested parties and customers, if I may put it that way, who say almost unanimously that they have been widely consulted regarding the facility and its capability and capacity, but they have not had any consultation or been asked for any views at all on where the Synchrotron should be located. So normally when you ask someone why it should take so long, they say the consultation period has been so long. In this case they say, yes, consultation on the equipment but zero consultation on the location. Why has it taken so long and why has there been so little consultation on the location?

(Dr Taylor) I think it is important to understand just how much evolution has taken place in this project since the beginning of the year. The proposal to build a third generation synchrotron came out of the Wolfson Report and then the second report is done under the heading of the Diamond programme. That produced some recommendations last summer, in the summer of 1998 which then, as you know, got involved with the Comprehensive Spending Review and the notion that the Wellcome Trust would make a very major contribution to the project as it was then proposed. Since about the turn of the year, a lot of things have developed in what this programme is. First of all we have been doing a lot of iteration and development with the Wellcome Trust to develop the notion of a public-private partnership with them to build a major facility. During the first part of the year, the notion that the French wanted to get involved in this project began to take shape and take substance and again that has involved a lot of further iteration about really what the project is, how big it is, how it is going to work. I think we are involved in a really exciting, major new facility for British science. The fact that we are moving in this direction and we have two partners who really want to help us build something is a very important piece of what is happening, but the machine design has been evolving very steadily and very rapidly during this period. The idea that we have been standing still doing nothing is quite fallacious. There has been a tremendous amount of work going in terms of what the machine itself should look like, what the user facilities around it are going to need to be like, and how the project should be managed and financed and procured and so on and so forth. So there has been a lot of development there. The proposal we have now is neither Diamond or Soleil and it is actually quite a different machine and a much better machine than it was at the beginning of the year and I think the system that we are talking about now is one that is probably at least twice as good per beam line for the users as the machine that was being thought about at the beginning of the year.

#### Dr Gibson

4. Are those questions very separate from the siting of the Synchrotron or are they relevant to the question of the siting?

(Dr Taylor) I think, despite all of the debate and controversy that has been going on, it is still fair to say that the siting issue is not on the critical part of this project yet. There is a full set of issues to do with

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Dr Gibson Cont]**

what kind of machine and how big a machine we need to build and what kind of facilities the users are going to need. Remember, this is a machine that is going to last for 25 years from now and we have to take a lot of thought about what kind of facilities we need to provide for as the machine design evolves and develops over that period of time. We are not going to turn it on in five years' time and then do nothing to it. We are going to turn it on in five years' time and then start doing a whole lot of things.

Dr Gibson: It could not be in the Millennium Dome for example, could it?

**Mr Taylor**

5. That will not last as long as the Synchrotron.

(Dr Taylor) I think it is fair to say that the question of open competitions for green field sites was talked about. One of the things that happened at the beginning of the year was just people saying: "We ought to look at this more openly instead of just automatically assuming it is going to be on the Daresbury site", and that is the process that people have been going through, but I think that most of us thought that the notion of actually contemplating a third UK site on which there would be a large accelerator was probably a move in the wrong direction. So I think the Millennium Dome is probably not a starter.

**Chairman**

6. My final question before we go to Mr Jackson. We know that the Wellcome Trust is making a very significant contribution—the lion's share—

(Dr Taylor) No, no.

7. Well, we thought the pot was £170 million and the Wellcome Trust was paying £110 million?

(Dr Taylor) No, sir.

8. Would you like to give us the figures as they are then?

(Dr Taylor) The total cost of the project, without discounted cash flow or anything—so in today's parlance—for all three partners is about £550 million over the 20 year lifetime of the project. That is broken down into capital cost and running cost and there is a capital cost for the core ring accelerator machine and capital costs for the beam lines that are added to do the experimentation and further costs for the support facilities around the user areas. So the capital cost of the core ring is about £116-£120 million. The capital cost of beam lines is about £2 million each, so depending on how many beam lines we build and at what rate we build beam lines you can see a range of numbers. The Wellcome Trust is probably at the moment contributing around 17 percent or so of the total lifetime cost of the project.

9. Right. Well, just help me then if you would, Dr Taylor? When I said £170 million I am sure I did not invent that figure. It is a figure I had read at some stage as the construction cost perhaps or thereabouts?

(Dr Taylor) Of the core machine?

10. Of the core machine plus the beam lines. Now I would not be too far wrong on that, would I?

(Dr Taylor) That is about right.

11. About right. Within £10 million or so?

(Dr Taylor) Well it was about right in June time.

12. Which is probably when I read it. £110 million or £100 million is not too far wrong for the Wellcome Trust contribution?

(Dr Taylor) But a great deal of that was running costs.

13. No, no, for the construction?

(Dr Taylor) But the situation that we have at the moment is that the Wellcome Trust are expecting to pay, I guess, around £30 to £40 million of the construction. Their contribution is the total cost both capital and running costs.

14. Ah, I think this is news to me and, I think, some Committee Members. We had thought, and this is why it is very interesting, the total construction cost was £170 million and the Wellcome Trust was putting £100 or £110 million in at the first instance. We did not know that that £100 or £110 million was going to be spread over five years and would be part of the running cost. Before you answer, may I just tell you what I was going to say next? I was going to say that if the cost was £170 million and the Wellcome Trust is putting in, say, £110 million, it could be said that the Wellcome Trust is paying the lion's share of the construction. Then I was going to say that the Office of Science and Technology, by making it a five year project, with running costs and so on taking it to £550 million is a device to make the Wellcome Trust contribution look like 17½ percent instead of two-thirds, as it was of the construction cost, and that is an attempt by the Office of Science and Technology to take away the power of the Wellcome Trust to have any say in where the location should be; all the location decisions should be taken by the people paying the 83 percent over the five years, which is the Government. But I would be totally wrong on that, would I not?

(Dr Taylor) Yes. There has been a lot of evolution over time. The numbers you were talking about were first put out in the context of a joint OST-Wellcome Trust project when there were only two partners and we have had lots of different models and examined many different ways in which one could split the cost of construction, the cost of running over the 20 years once the thing is up and the cost of ancillary facilities for, for example, things we have tended to call research hotels, the ability for many users to come, bring their equipment, do their experiments and go away again. So we have explored many different financial models. I think that the Wellcome Trust position has always been that they have offered a cash total of £110 million maximum to the whole project over its lifetime. As the French have come on board, obviously the parameters change again and we are talking about a larger machine, we are talking about a machine which is consequently much better for each of the individual beam lines, a factor of two or three better in terms of what facilities individual experimenters get, and we are in the middle of the sort of process of exploring how we want to structure that kind of thing. But I think it has never been in any great doubt that in the three partner situation the lifetime cost is of the order of £550 million and

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Chairman Cont]**

Wellcome have always said that their contribution is a maximum of £110 million to the whole life cycle of the project.

Chairman: Dr Jones and then Mr Jackson.

**Dr Jones**

15. When are Wellcome going to pay over their £110 million? You mentioned 20 years. Is it going to be up front or is it going to be over 20 years? In the context of 'we'—you are saying 'we'—who is 'we'?

(Dr Taylor) I think this is one of the areas in which we have been negotiating and exploring options. There are various different ways in which different partners might want to participate, but I think the kind of model that we are closest to converging on at the moment, though I emphasise that there is no firm agreement on this at the moment, is that probably each of the partners would be assigned a certain number of cells on the machine and they would pay a proportion of the capital cost according to the number of cells they have and they would pay a portion of the running costs according to the number of cells they have had. But we are still in the process of exploring, for example, with the French what they really think their need is. The French tradition for this whole area has been one of physical sciences and one of the main reasons they want to join the project is because they think it is going to be absolutely crucial for bio-science. They are only really beginning to explore their real need for bio-science capabilities and capacity and it may well be that they actually say to us over the next few months that they need more capacity than we are currently talking about.

16. But we are going to have a decision about all this in January, are we not? I still do not know who 'we' is?

(Dr Taylor) I think most of what we are talking about really is not dependant on the site decision. The only extent to which it might be dependant on the site decision is if continued postponement of the site decision makes people feel uncomfortable, but most of the questions about how big the machine needs to be and how we want to structure the financial arrangements, the management arrangements and so on really is quite independent of where the machine is built. So the process of converging on all these things will go on for the next year almost. We have a lot of work to do before we are ready to place a few hundred million pounds procurement contract.

**Mr Jackson**

17. We have already talked to some extent on the question of location. I wonder if you could just explain a little bit in general of what your thinking is about, what the principles should be that should govern decisions of this kind as to the location of this sort of facility?

(Dr Taylor) I think there is a kind of set of below the line issues and then above the line issues. Below the line issues have to do with making sure that we go to a site where there are no major problems in terms of geology or access or power supplies and planning permission and all of the sort of things that would be

necessary but not sufficient, and I think, from that point of view, we agreed with the Wellcome Trust quite early in this process that although in theory one could go to completely open competition and invite many different green field proposals, that would not be a wise thing to do either in terms of looking at a third site which would require all of the new infrastructure that already existed on two of the sites and possibly putting a lot of potential bidders to a lot of nugatory expenditure in trying to propose offers that would be useful. So, if you set them aside, I think the kind of ideal that one is looking for has to do with the kind of science that is going to be done in future on this site. What is being built here is a major, third generation facility for doing the structure of many different kinds of matter, both in the physical sciences and particularly importantly, in the bio-sciences. As we decode the genome each one of those genes codes for a protein and most of those proteins are unknown and have unknown structure and unknown function and the ready accessibility of the wide variety of the bio-science communities to the ability to do those structures in probably quite new ways, in high volume, rapidly, remotely, there are many new kinds of instrumentation, techniques are going to be developed as these applications open up. So I think that the most important thing is that it is in a place where the science can expand and develop in ways that we cannot foresee right now. One of the attractions of the Rutherford site is the existence already of other major facilities which are also there for looking at the structure of matter related to the spallation source and the nuclear magnetic resonance facilities. None of us knows in future exactly how science will develop to crack these huge problems that are sitting down in front of us. They are problems which are orders of magnitude, bigger in quantity and volume than we are trying to deal with at the moment. So, it is a place where the maximum flexibility would be important. It is a place which could become really a world class attractor for scientists, best in the world, working in these fields and I think if one is looking at it from the point of view of what the science needs, it needs that headroom, it needs that ability to go wherever we need to at world class quality and pace over 25 years. 25 years is a long time, so a great deal of it is unpredictable.

Chairman: Mr Jackson, you might like, just for the record, to declare the fact that the Rutherford Appleton Laboratory is in your constituency?

**Mr Jackson**

18. I do not see that as an interest, but that is the case. I want to, though, suggest that there is a political dimension to this which I want to put to Dr Taylor and I do not mean by this, you know, jobs in the north west or those sorts of north/south type questions, because the number of jobs involved is really very small, but rather a big political thing. I have twice been involved in my career as a Minister in the Department dealing with scientific matters and I remember feeling—and I do not know whether the advent of your office, which I had something to do with the creation of—has made any difference to this, that we seem to be rather bad as a country at forming

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Mr Jackson Cont]**

a strategy for investment in big science, particularly in the perspective of necessary international collaborations and it seems to me that there is a set of issues arising from that kind of consideration which does have important bearings on this locational decision and I wonder if you could comment on that question?

(Dr Taylor) I am not sure I quite understand you, but I will make an initial comment. It seems to me that what we are doing—and by ‘we’ I mean the Office of Science and Technology, the Research Councils, the Wellcome Trust and the French—is actually quite ground breaking in the sense of working out how to do major international collaborations on major scientific facilities, and it seems to me that if we in the UK want to continue to have major scientific facilities sited in the UK, then more and more we are going to have to do it collaboratively and so we are going to have to be able to convince people that the best thing to do is to site it somewhere in the UK and that we can finance it, manage it and procure it in a collaborative manner that meets other partners’ requirements and that we do not feel we are making uncomfortable compromises and trade-downs if they decide to come and take part in a major facility that happens to be sited in the United Kingdom. Clearly we will have to do it the other way round on occasions as well, but I think this project is a particularly important example where we are actually breaking new ground, where we could end up with a major facility which is really unquestionably world class and where people could well say, well, it can be done without having to go into an incredibly complicated, bureaucratic, 17 nation, endless—sorry, I probably should not have said that—but fast-paced, bilateral collaborations are going to be a very important mechanism.

19. I found that a very helpful answer to my question. I guess I want to draw out the point that there are international political dimensions to this which I would argue are more important than any national political dimension to it and there is the thought—and this is a point you did not mention and I wonder if you could come to this—that there may be some interaction between the decision about the location of this facility and the next big decision which will have to be made about the future of the ISIS arrangement and I wonder if you could comment on that?

(Dr Taylor) I think one of the issues that we are examining for the siting issue within the UK has to do with this awful word ‘synergy’ and we are looking at the scope for various different kinds of synergy as we look at the options. One of them has to do with the scientific and technological level of the accelerator machine itself and clearly the ISIS facility and the new Synchrotron and the existing Synchrotron are all based around a fairly similar kind of accelerator technology, so we are very concerned to make sure that we retain and develop our expertise to design and build those synchrotrons. Again, one of the attractions of this particular project with the French is that the French designers would also be part of designing the new machine and we would have a really world class design team to put this machine together. It is a very open secret that there are two routes ahead for the evolution of

neutron sources around Europe. One is a revolutionary way where we say: “Let us build a brand new source somewhere” and the other is an evolutionary one where we exploit the capabilities of the present ISIS machine. It has great capabilities for extending its capabilities in terms of additional beam current, additional facilities in the machine itself and a second target station and the route of doing that would be a very powerful way for continuing—

Chairman: We have a long way to go so we must try to speed up a little bit. Now we are ready to continue on with the ISIS machine that you just referred to, but Dr Gibson has to leave in three minutes so he has a question just before he departs.

**Dr Gibson**

20. You mentioned in an earlier answer that—I cannot remember whether it was immediate—accessibility was very helpful and so on. It seems to me that you mentioned also the example of proteins. If we want proteins analysed it does not matter whether it is Leicester or 100 yards along the walkway that we have to go, which is always more convenient of course—to just walk 100 yards, but we can get it done in a short time anywhere. We could do it in the Orkneys if the Synchrotron was there, for example. You seem to imply that the development of life sciences depended upon immediate access to high flying genome research. That rather biases where it would be, does it not?

(Dr Taylor) That was not the point I was seeking to make, I think, and one of the other synergy dimensions which is a great concern amongst the community, I think, is how well do scientists in allied disciplines and with allied techniques actually use each other’s techniques and cross over. So it is not, I think, so much how easy is it for a bio-scientist to get to a synchrotron, but how can we persuade people who are using synchrotron techniques to also explore other techniques and how can we persuade people who are using neutron techniques, for example, that they should explore synchrotron techniques. It is very likely that as these fields evolve, there will be tremendous strength in the science from people actually mixing and matching across these communities instead of staying in separate communities. So it is the interplay amongst the scientists that we care about.

**Mr Beard**

21. Why would it be more persuasive to get people to transfer from one technique to another if the facilities were next door to one another?

(Dr Taylor) Because they would probably meet over coffee. They would actually talk to each other about the kinds of techniques and the capabilities of their techniques instead of remaining in very separate communities that just do not understand the capabilities of each other’s machines.

Chairman: Right. We are going to continue on the ISIS machine. We are jumping slightly ahead of you, Mr Beard. We are going to go now to Mr Taylor to keep the continuity. We will come back to you in a minute.

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**Mr Taylor**

22. I fear this debate over a very important scientific research fund has been focused more on where it is going to be based than on the science itself. This to me is completely the wrong way around and a rather traditional British disease of making regional policy the driving force of scientific excellence. May we just look at the scientific implications here? Further to what you have been saying already, what are the cross over effects, scientific or technological, with co-location with a neutron source and even the laser facilities at the Rutherford Appleton Laboratories?

(*Dr Taylor*) I think at the end of the day that question is a question of judgment for the scientists, and that is part of the set of questions that we have been asking them and certainly will be asking them in a very focused way now.

23. Well, if you are going to make the decision in January, I assume that some of the judgments have now been percolated through the OST and are now in your head?

(*Dr Taylor*) I think our expectation is that there is a lot of opportunity for people deploying complementary structural techniques as they develop into some of the difficult—

24. Sorry, I have the highest regard for you. I also know a little bit about the sort of things you do in your job, having been responsible for your predecessor. But that is not a satisfactory answer. The fact is that I think you are holding back because you actually do not want to talk about the location. I am not talking about the location in terms of where it should be, I am talking about the scientific evidence of co-location at a laboratory, which happens to be Rutherford Appleton, and what have you deduced? All the evidence has come to you, as the Director-General of the Research Councils, as to what the scientific basis of co-location is?

(*Dr Taylor*) The conclusion that we reached in the summer time is that there is significant scientific benefit to having the two sets of facilities alongside each other rather than widely separated, for the reasons I am trying to indicate.

Mr Taylor: That is a very helpful answer. Thank you very much.

**Dr Jones**

25. What are the advantages? We have had evidence that there are no major advantages in having the two facilities located together.

(*Dr Taylor*) I think we have had evidence, all of us, that some people say if you look at what has happened historically in other places, if you look at what has happened so far in the United Kingdom there is only a modest overlap of people using neutron work and people using synchrotron techniques. That is a fact; it is interesting, but I think the really important scientific judgment is about the future. It is about how these techniques are likely to evolve and it is about how if you did co-locate these people and really promote their interaction, how much more synergy you would get. We have, for example, had evidence to say that in areas where there has not been much synergy it is because of the

way in which the facilities are organised and managed which discourages people getting together. We are also aware of various studies going on in other places to actually dig into this question of why bodies are getting in the way of people doing things they say they actually want to do.

**Mr Taylor**

26. Your answer was helpful and I pre-suppose from your answer to me that there are genuine scientific advantages of co-location. If one is looking ahead at the five year programme, for example, it is going to take to build this, and the possible scientific advantages and advances that will come, then a co-location with the neutron source and those facilities could well be fairly critical to the European and international excellence of the centre we are trying to create?

(*Dr Taylor*) I think that is so.

Chairman: Mr Jackson, and then we go to Mr Beard.

**Mr Jackson**

27. I think it would be useful to have on the public record that the advice coming from your office and the Government is in a sense that which you have indicated, but I just wanted to pick up on a reference you made in your earlier answer to Mr Taylor to the consultation of the academic community and I want to ask you whether this consultation is going to take account, and to what extent, not only of existing users but of potential, future users of this facility, particularly perhaps as it might be configured in a new arrangement with Rutherford?

(*Dr Taylor*) I think the position we are in at the moment, as I said, is forming and refining and improving judgments about the likely future options and the benefits of likely future options. The Secretary of State, as you know, has asked us to do further refinements both in terms of looking at the physical issues in the site and, again, going back to users and really trying to tease out more opinions and judgments about the likely future benefits of co-location as opposed to separation.

28. That includes potential users?

(*Dr Taylor*) It has necessarily, I think, to include potential users, but highly informed potential users. I think we would be remiss if we did not in some way seek to get informed judgments about what future options and opportunities would be presented in those two situations. So we are in a process of refining and getting further input into our position.

**Mr Beard**

29. Could I just clarify the point that you have just been debating? These are central facilities; the Synchrotron is a central facility for British science and the neutron source presently at the Rutherford Appleton Laboratories is a central facility for British science. People go there from either university or commercial laboratories and do what is needed to elucidate the structures of proteins or whatever, and then they will go back to their laboratories and

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Mr Beard Cont]**

analyse them. In those circumstances, I am still not clear why there is benefit in having them next door to one another because if they have got hooked on synchrotrons and they are doing this work there and someone else says: "Well, why do you not try the neutron source?" they just have to catch another train?

(Dr Taylor) I think the argument that is put by the scientific community is that there is a great deal of difference between having two separate communities a long way apart that rarely talk or meet. There is a great deal of evidence in past sorts of situations that when you get people around the same coffee pot, when you get people talking about each other's techniques and each other's problems, that actually a great deal happens, and the kind of thing that is being looked at as far as co-location is concerned is really around a question of what kind of research campus—the phrase that is being used—could you create, would it be necessary to create, to get the kind of benefits that, in the judgment of scientists who know about these things, might produce some really serious benefits.

30. Could I, Dr Taylor, take you on to the wider implications of this? What estimates have been made of the technological and economic and social advantages to a region of having this sort of facility in it?

(Dr Taylor) To a region?

31. Yes, or an area?

(Dr Taylor) I think the question of the short term economic impact of this kind of thing on a particular region has not had any huge in-depth studies, because I think most people's view would be—certainly, I think, the track record of the current facilities—that the immediate spin-off is not very great.

32. What about the long-term economic impact?

(Dr Taylor) I think even in the long term, the immediate impact is, as we have heard earlier, a modest number of direct jobs, a fairly large visiting and floating population—people come and stay and go—and a lot of the serious economic impact from working bio-science and so on, would tend to come probably more from the areas in which the experimenters are hosted and are really developing the fruits of the work. This thing, after all, is a tool.

33. But there has not been an in-depth examination of the impact of this facility or facilities like this?

(Dr Taylor) I think that would be a very difficult thing to do any serious work about because we are talking about so many future imponderables on the scientists' work.

34. Okay, if this were located at the Rutherford Appleton Laboratories, it would accelerate the concentration of British science in the south of England. Do you see that as an advantage or a disadvantage?

(Dr Taylor) I am trying to approach this from the point of view of what is good for British science and it seems to me that in this case there is a lot of merit in bringing together a critical mass of expertise about accelerators, of expertise and sharing amongst the users of infrastructure and support. The question of whether that is in the north or the south or whatever

is quite irrelevant, I think. The issue being debated and being refined and examined in the consultations we are doing shortly is around the question of is there a serious critical mass effect, are there serious synergies, are there serious benefits in having people who really know how to design accelerators better than anybody else talking to each other about their machines on the same campus.

35. Could you just summarise for us the scientific pros and cons of the two sites that are most actively under debate?

(Dr Taylor) If we talk about the Daresbury site, that is a very well recognised first class machine of its kind, second generation machine. It has been operating for a long time. It is doing very, very good work, particularly in the areas of bio-science and so on. It is a machine we are continuing to invest in in a very serious way. One of the things I am very concerned to make sure is that we continue to keep that machine operating, if necessary beyond when the new machine turns on so that we really do have the capability to continue to do the science. So the capability at Daresbury to continue to do the science on the current machine is excellent. If we built the new machine alongside it, there are various logistic difficulties and so on. Could we continue to operate the old machine and new machine in parallel, etcetera and we will be looking into those in the physical site survey. There is no other major research facility there so the question of synergies between different techniques does not really arise on the Daresbury site and I think we have already discussed what might transpire, both at the level of machine and the users on the other site.

Chairman: Now, we are 70 percent through our time and only 30 percent through our questions, so we have a problem and I would ask the Committee, and indeed the witnesses, if they would be so kind as to recognise that fact. I am going to call Mrs Curtis-Thomas now, after which I will call supplementaries from Dr Turner and Mr Jackson.

Mrs Curtis-Thomas: I am rather concerned that you say that there has been no social economic impact assessment done on either region and I declare myself as a Member of Parliament from the North West who has quite a number of employees currently working at the Daresbury site. The Daresbury site is seen to be crucial for our research base in the North West and the notion that it operates in isolation is farcical quite frankly. It has a significant relationship with universities in the North West where there are a considerable number of collaborative projects. In addition, it has links into North America and also throughout the United Kingdom, so I want to confront the idea that you have that the location of Oxford is sort of a hub of intellectual activity and that it cannot be replicated elsewhere, because it is being replicated at Daresbury and the continuation of the Daresbury site is crucial to the development of our research activity. The removal of it will have a significant impact on our regional development. To ignore such real personal dimension in your consideration is I think a weakness, it is a significant weakness. It is naive. I applaud the development of scientific excellence, but I cannot condone the reason for what I think is a very significant fact. Therefore, I ask you, is there any

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Mr Beard Cont]**

intention to take on board the dynamic of the region and the regional development and strategies which are in place at the moment in the DETR when you make your mind up about this particular facility?

**Chairman**

36. Dr Taylor, when you answer you will be mindful of the fact that we are the Science and Technology Select Committee and not the Environment Committee?

(Dr Taylor) If I could comment on the first part of your question first. I did not say that Daresbury operated in isolation. I am very well aware of the connections that Daresbury has into the rest of the community and indeed I said Daresbury is doing excellent work and is absolutely crucial to the kind of things that are going on in the bio-science programme at the moment. I was merely commenting on the physical co-location of other major facilities which people in the future of those areas might wish to use, so certainly I would agree with you that Daresbury has good linkages with many other places. In terms of linkages with wider issues, I think that is, in some senses, as the Chairman indicated, a much broader set of issues and basically what I am asked to comment on and advise on is the science and related topics.

Chairman: Right. Now, Dr Turner, then a quick one from Dr Jones.

Dr Turner: I am intrigued by your co-location arguments and we all appreciate the importance of synergy, but if we follow your argument to its prime and logical conclusion, then you will end up with one gi-normous campus at Oxford which will be so big not everybody will be able to get anywhere near the coffee room to interact.

Mrs Curtis-Thomas: Absolutely.

Dr Turner: It would also mean that a logical consequence would be that you close down the rest of the country and that, if you think about it, is not necessarily a good idea. It is also—dare I say it—an old fashioned way of looking at interaction because all the people you are talking about are on-line.

Mrs Curtis-Thomas: Absolutely.

**Dr Turner**

37. They can communicate very, very easily. You do not actually have to be physically, literally next door. The Chairman will not let us stray into environmental considerations, but the impact of putting yet another magnet, drawing people and activities into the Oxford region would mean that a Professor Crowe would be saying: "Well you need two million houses, not just 1.1 million. So can you really justify your technique for putting these arguments so strongly in the light of modern technology?"

(Dr Taylor) What I am talking about here is not a policy for all of science in the whole of the United Kingdom. Indeed, I spend most of my time making sure that we have met various different kinds of groups of critical mass in various different parts of science, technology, different disciplines. This is a rather special, rather unique issue because we are talking about a very large facility whose underlying

technology is very similar to another very large facility. We are not going to replicate these all over the place and indeed, in the medium term, the issue for the UK is how do we remain a world class player in some of these technologies. So what we are looking at here is very much a question of sustainable critical mass for a particular set of underlying instrumentation technology. As far as the question of people being on-line is concerned. I think you will probably know as well as many of us that physical proximity has a very key role to play as well as electronic proximity. The notion of clusters, the notion that people do actually need to know each other and informally chat with each other about, really, rather difficult risky scientific activities I think is well substantiated.

Chairman: We will leave it there. Not everybody on the Committee always has to agree with the answers that are given. It is just that we get the answers which is important, not necessarily agreement with them. Mr Jackson, if you could be brief.

**Mr Jackson**

38. So far as I know, not even the Modernisation Committee has suggested that Members of Parliament should not meet and all communicate on-line. There is some advantage of being one's own coffee pot. But I want to ask a question which arises from the economic discussion. What would be the savings, in terms of overheads, which would come from co-location and how much extra science would you be able to buy for those savings?

(Dr Taylor) There have been a lot of attempts to examine those kinds of questions and I think the situation is at the moment that the economic saving issue is not a crucial one. It is almost certain to be cheaper to put things on one site, but that really is not a crucial factor in the decision. ... I think if it had been very clearly obvious that it would save a huge amount of money if the two sites were combined—

39. There would be some savings?

(Dr Taylor) I think all of the indications we have had are that there would be some savings, but it is fairly hard to quantify them at this stage of the project and it depends so much on, for example, what happens to the sites as they develop over this time.

40. And you could buy more science with the savings?

(Dr Taylor) Absolutely.

**Dr Williams**

41. Do you accept that when the decision of the Synchrotron was initially announced there was a presumption that it would have been in Daresbury?

(Dr Taylor) I think that is factually true, yes.

42. And all the expertise in this country at the moment on synchrotron technology lies in the workers in that Daresbury unit?

(Dr Taylor) I think one of the cases that people have been looking at is that very similar expertise in terms of accelerator and design and so on is also present on the Rutherford site in the ISIS facility.

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Dr Williams Cont]**

43. Do you accept that, as we develop centres of excellence at Cambridge, London and in Oxford, we need many, many centres of excellence and if this decision is taken to site it at Daresbury, it will develop its own cluster? A lot of other things would be attracted to the same area, so there is a multi-crowd effect in that area?

(Dr Taylor) I have not seen any analysis to show that. I think most of the characterisation I have seen so far has been what I referred to earlier, rather than people will come there, do things and go away, so the major expertise is in actually the underlying accelerator technology and then the beam line at other stations.

44. I would just like to explore, a little bit, the Wellcome influence during the last six months. We went through its finance and I would be grateful, if it was possible, as I am sure it would help the Committee, if we had some kind of profile over 25 years of where the £110 million comes in throughout them and where does the Government money come in? Certainly the impression I got from your submission to us was that the Wellcome money is front loaded but that the Government money is found over the 25 years, hence the Wellcome pressure, perhaps, behind the scenes to have this located in Oxford. Would it be possible to provide some kind of flow chart of how that money will come, the French money, the Wellcome money and Government money within the £550 million?

(Dr Taylor) I think we could give you something that would be a very crude, indicative example of what might happen. We are not at a stage where everybody has agreed. As I said, it is very much a uniform spend during the 20 years of the running cost.

45. In terms of Wellcome's discussions with you, is it the case that they will pull out if the decision is taken to locate this in Daresbury?

(Dr Taylor) Well, I think that is probably a question for the Wellcome Trust rather than me.

46. We will have them here next week, but is that your impression? That there is some kind of threat overhanging, that they will pull out if it is not located in Oxford or will they put up with it?

(Dr Taylor) I think we are trying to develop this as a groundbreaking kind of partnership where ourselves and the French and Wellcome are going to work together, so we naturally consult our partners about their view. I think Wellcome have made no secret that they see the strength of the science argument in favour of Rutherford Laboratories. What their position is in terms of withdrawing from the project, I really think you should ask them.

Chairman: Dr Kumar, I think you would like to pursue this?

**Dr Kumar**

47. Yes. I mean, you have just touched on it, the influence of Wellcome Trust and the French Government. Can you just tell us how much progress you have made with them and how much they are influencing your key judgment in decisions, whether it is location, whether it is design, whether it is specifications? Just tell us where you have had

agreements, or when you do not have agreements, what do you do then, because it is going to make a major impact and where do we go from here? Just tell us the process?

(Dr Taylor) Since September, we have been developing three streams of activity with OST, the Wellcome Trust and the French. Those three streams are about the specification of the core accelerator facility, what exactly should it be, how big should it be, what should its parameters be. The second stream has been about what do the users who are going to do science on it really need, what kind of facilities at the end of the beam lines and so on, and the third has been about project management, finance, legal, all the arrangements we need in order to manage what is going to be a very large, complex project. So we are having regular meetings on those three streams—the next one is on December 13—and we are iterating a lot of complex questions as we go along.

48. Would you say their influence on you is more than 51 percent in where you make your judgements and decisions or less than 51 percent?

(Dr Taylor) The present funding models show that OST is more than 50 percent of the project and certainly in terms of the specification requirements and user requirements. We are having a rather collegial set of discussions to try and get a clear sight of what is needed scientifically. The French have made it clear that they are content to leave the choice of site to the UK Government, but again they have let us know various opinions they have, from their point of view, what they would prefer, but they have been very—

49. Where do they prefer?

(Dr Taylor) They have been very scrupulous to say that the decision is, as far as they are concerned, for the UK Government.

50. No, but they have given an opinion; where do they prefer it to be? Just let us explore that. Where do they prefer to be?

(Dr Taylor) Again, we do not have any official opinions from them on this. I think the sort of talk around the French user community and so on that one sees in the press and so on, is that they would tend to favour also the scientific arguments in favour of Rutherford Laboratories. They have been absolutely scrupulous not to lean on us about this.

**Dr Turner**

51. To go back to the beginnings of the agreement with Wellcome, what was the understanding on the question of siting when Wellcome signed up to the agreement; were there any understandings concerning siting as opposed to the principle of building a new machine?

(Dr Taylor) I find it hard to give a personally accurate answer on that in the sense that I was not involved in the process at that time.

52. There must have been something minuted?

(Dr Taylor) I think at the beginning of the process of substantive discussions with Wellcome Trust around the end of last year, they made it very clear that they would like to see an open discussion about the site and they were not comfortable with the

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Dr Turner Cont]**

assumption that it would *de facto* be at Daresbury. So their initial position was we should have an open discussion about siting.

53. Did they give any indications that their participation was conditional in any way on the site, in other words, that they would still be in if Daresbury were the chosen site?

(Dr Taylor) I do not think that kind of question arose at that stage. Their position at that stage was we should have an open discussion about where it should be sited.

54. There would clearly seem, on the face of it, to be some tensions arising in this private-public partnership. Do you think it is an arrangement that is working well and that is going to be a good blueprint for future large projects? Just how difficult are the tensions?

(Dr Taylor) I think it is working very well. I think if you try and do anything like this in this kind of environment with so many variables, you must expect some fairly robust exploration of alternatives. But I think it is working very well; I am very pleased with the attitudes of all the partners involved and in something as complicated as this I am actually quite surprised we are doing as well as we are.

55. Do you think there are any lessons to be learned for the future and how much do you place your deliberations in the widest context of maintaining British science for the whole country?

(Dr Taylor) I think we are learning as we go along about how we need to think about the views of our partners and understand that they do not necessarily make all the same assumptions that we make and therefore we need to be quite open to listening to what partners think and coming to some kind of workable agreement that is in the interests of all the partners. As far as the interest of British science is concerned, I think this is a very important project because it is a great tribute to the present quality of British science that both the Wellcome Trust and the French want to invest in such a major project in the United Kingdom and that is partly because of our expertise in accelerator technologies and accelerator design, but it is also very much because the user community, particularly in the bio-science arena, but also in the physical science arena, is right at the leading edge of using these kind of facilities to do world class science.

56. Do you think it healthy if, as you have tended to suggest, we get a very large concentration along the Oxbridge access? Do you really think that is healthy for the rest of the British scientific and academic communities and industrial spin-offs?

(Dr Taylor) Again, I do not want to go into wider economic policy and regional policy particularly. That is not my field. I do not think we are getting a sort of total concentration along the Oxbridge access.

57. It is beginning to look that way?

(Dr Taylor) I think there is a great deal of expertise in other areas, in the North West, in Scotland, in other places so I think it is always going to be a challenge to balance over-concentration against over-dispersion. Again I come back to the notion of clusters. There is a lot of evidence around that

actually having a certain critical mass of people interacting in a physical area does make a world of difference to what you can actually get achieved. That does not all have to be in one place in the country, however.

**Chairman**

58. Dr Taylor, we were going to try and finish by quarter past five; clearly we cannot. Are you able to stay with us for another quarter of an hour?

(Dr Taylor) I am at your disposal for however long you wish.

Chairman: Thank you very much indeed. Well now two quick supplementaries from Mrs Curtis-Thomas and then Mr Taylor and then Mr Beard.

**Mrs Curtis-Thomas**

59. You referred earlier on to possibly operating twin sites. You said that if the new facility went to Oxford you may be operating a site there and also you would wish to see the site in the North West continue. Given that you said that the level of abilities of the people employed in Daresbury is outstanding, where would you source your second culvert of skilled staff from?

(Dr Taylor) I think we are not talking about a long term dual operation in both sites, but one of the issues that is being studied, amongst many others at the moment, is what is the best way to approach the question which is often referred to as a dark period, should there be a dark period when neither machine is operating? Can we recover some of the delay, perhaps, in getting the new machine built—remember the Wolfson report said it should be operating by 2001—by some degree of parallel running for a while? I think there is a whole set of questions about the logistics of doing that which we have not examined in detail yet.

60. There are a number of questions surrounding the dark period in the event of the machine either being built in Daresbury or, in fact, down in RAL and the sensitivities of both of those machines and Daresbury looks to be the least sensitive and therefore is less likely to see a destruction of service. When do you propose to undertake that very crucial analysis?

(Dr Taylor) That, as I have said, is one of the questions involved as we get into more detail on what this project is going to look like and what the real requirements are in terms of the detail of particular projects, particular crucial services and so on. I do not think at the moment that the dark period issue is a crucial one in terms of a determinant between the two sites. The issues come up plus and minus on both sides.

Chairman: Mr Taylor; could we be very brief?

**Mr Taylor**

61. I will be very brief. What we are talking about here is a centre of excellence, no matter where in the country it is, for the next generation. But there are people—like atomic and molecular scientists—who

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued

**[Mr Taylor Cont]**

would actually be content with the energy source at Daresbury, the 2GeV. Could that continue in any event for other scientific experiments?

(Dr Taylor) I think most of the analyses that have been done on those questions indicate that the cost of keeping the old machine running for a significantly long period of time would be prohibitive. There is a lot of refurbishment and so on that would be required and the cost of operating two machines is, I think, quite prohibitive.

**Mr Beard**

62. Dr Taylor, could you tell us where the present users come from; who uses the facilities at Daresbury and who uses the facilities at Oxford, both geographically and the split between academia and industry?

(Dr Taylor) I could give you the details about that. It is a very long list of people from a wide range of diverse places.

63. Is there an overall summary? Do the majority come from academia or industry? Do the majority come from the North of England or the South of England?

(Dr Taylor) I think the majority come from academia and I think they are spread around quite widely, all over the United Kingdom. But I can give you the detail; I have it here but it would take a long time to read it out.

64. If we could have it after the session. Thank you very much.

(Dr Taylor) That is for the existing machine.

Mr Beard: Yes.

**Dr Jones**

65. How important—I come from Birmingham so I have no vested interest in either side—but how important will the present team at Daresbury be in the design, construction and management of the new Synchrotron facility?

(Dr Taylor) The design expertise at Daresbury is absolutely crucial to the new facility wherever it is and as we develop a partnership with the French, the French expertise that produced the Soleil design is also a great factor in the quality of what we can finally do. So that expertise is crucial.

66. You referred to having an overlap between the new facility and the existing facility. Would that imply that you would need additional specialist staff for that to happen?

(Dr Taylor) I think the question of the core design, the scientific and technology expertise for designing the machine has relatively little to do with running the Synchrotron day to day for some months in an overlap phase or some months not in an overlap phase. They are quite different sets of people. So I would expect to see the great expertise that we have in the Daresbury team as it is there now, very actively spending almost all of its time on the design of the new machine.

67. Is there any shortage of specialist staff of the type that would be required?

(Dr Taylor) It is always difficult to find the best people.

68. Some of our evidence suggests that staffing costs at Rutherford Appleton are, on average, 12½ percent more than at Daresbury and that is because, to aid retention, staff have to be put on a higher grade. Is that correct and what are the implications of that for running costs if it were to move to the South?

(Dr Taylor) I cannot comment on whether that is an accurate statement or not, but again we could certainly give you—

69. That is not something that you have looked at in terms of staff retention?

(Dr Taylor) There are various discussions and opinions about that kind of issue. Whether it is a substantive issue in terms of the development of this facility is, again, one of many issues. For example, the way in which we need to procure this machine and the way in which a specification can be produced, consortia can be assembled to compete and the expertise between the various teams that we have at Daresbury and Oxford and the French, can be made available to whoever it is that is going to design and build this machine as a contract is, again, a very ongoing set of discussions that we are in the middle of.

70. What would be the impact of the decision to move to Oxford on the retention of the staff which you say are absolutely crucial to this development?

(Dr Taylor) I think those staff are mobile staff and the whole question of the transition plans and the ones to support those activities is yet one of the many things that we have to work through over the next five years. This is not something that is going to happen tomorrow.

71. So you have discussed this with those staff and they are happy that, if the decision was to move to Oxford, they would move to Oxford?

(Dr Taylor) We have not been through that level of consultation at this stage because we are still in the process, as you know, of trying to understand what the balance of scientific judgment is about the merits of the case.

72. But surely that is very important in terms of staff?

(Dr Taylor) Those aspects will be very important as we develop the project and the programme.

73. And if Oxford is chosen, what will be the impact on the Daresbury site, beyond—obviously the current facility will continue for a while, but would happen after that?

(Dr Taylor) That again is a set of issues which have not been finalised yet. There is a lot of activity going on to understand options in the event of that kind of situation, but it is too soon yet to be more precise than that.

74. No idea about job losses?

(Dr Taylor) I think it would be not appropriate for me to try and give you accurate figures about job losses or so on because we are talking about a period five or six years from now at least, and we are talking about there being many options about what might happen in the event that the machine did go to the other site.

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Dr Jones Cont]**

Chairman: Just two quick questions. There is one from Mrs Curtis-Thomas, one from Dr Kumar. Then we want to move on to the Joint Infrastructure Fund.

**Mrs Curtis-Thomas**

75. Just a brief question arising from the comments you have just made. You say that no consultation has been undertaken with staff to date and yet there is a decision expected on the location in January. I would have suggested to you that a conversation to ascertain whether or not they would be prepared to move is crucial. Do you intend to have that conversation with the staff before January?

(Dr Taylor) There have been lots of consultations with staff—

76. About their willingness to move in the event of the site location being chosen as Oxford?

(Dr Taylor) I think that takes you into very individual cases.

77. And has that been done?

(Dr Taylor) I think at this stage that is a premature thing to do.

78. So it will be done after the site location is chosen?

(Dr Taylor) I think the investigation of those issues needs to be something which goes on as part of this whole programme.

79. After the site is chosen?

(Dr Taylor) The detail of exactly what would happen in either case is something that will need to be worked through.

80. But staff have not been consulted at this time?

(Dr Taylor) There has been consultation with staff about the likely options of what is going to happen.

Chairman: Dr Kumar?

Mrs Curtis-Thomas: May I ask a further question?

Chairman: Very quickly, because we are now straying on to non-scientific areas.

**Mrs Curtis-Thomas**

81. The other question I have to ask is in terms of—you mentioned it right at the beginning—our Chairman asked with regard to users—whether they were going to be consulted or not on location. How many users are you proposing to consult?

(Dr Taylor) The process that is operating at the moment is that we have basically gone to the two groups of users that we established at the beginning of this year.

82. How many users?

(Dr Taylor) It will be around 40 I think.

83. Of a thousand? And you think that is a representative group?

(Dr Taylor) What we are seeking from this consultation is views on the key issues.

84. From 40? I believe that is an insignificant number and represents the overlap between the two technologies. That is just a group there; what about the rest? Do they get a say?

(Dr Taylor) I think that question is again one that leads on to further ones, for example, how do you consult future users?

85. They are existing users, they have a vested interest in the existing facility and a vested interest in the future facility. Are they going to get a say about where they think that facility ought to be, given that they have been involved in the technical specifications of the new facility?

(Dr Taylor) I think the notion of consulting every possible person who has ever used the Synchrotron facility is an impractical one. What we can do, in response to the Secretary of State's request, is to consult the user groups that we have established who have done, I think, quite well in the course of this year in speaking for their communities in terms of the kind of facilities they think will be required in the future machine. That is how these two groups were constituted and what we have asked them to do is to represent the views of their communities on the scientific requirements for the future facility.

Chairman: Mrs Curtis-Thomas, the Committee will note that only 4 percent have been consulted and that is user groups, and I think at that stage we should move on.

Mr Taylor: That is user groups. That is not the same as users.

Chairman: Well I thought it was 40 user groups out of 1,000 user groups.

**Mr Taylor**

86. 1,000 users.

(Dr Taylor) It is users or user groups?

**Chairman**

87. Is the 40 user groups that you have consulted, is that not comparable to 1,000 users. How many user groups are there altogether because you allowed us to believe in answer to Mrs Curtis-Thomas' question that you were consulting only 4 percent of the users. Would you give us something that you think is more accurate, regarding consultation?

(Dr Taylor) What I said earlier on was that we have, from the beginning of this year, established two user groups, one for the life sciences, one for physical sciences, specifically to ask them, on behalf of their communities, what their views were about the scientific requirements for the future machine. They met, they have debated, they have published their report and I think they have consulted quite widely in the process. What the Secretary of State asked me to do, as part of this further consultation process, was to go back to those two user groups that we have established as part of the process of defining this project and to ask them to give us views about the key issues that would affect the choice of site in their view.

Chairman: Right, okay. Well I think we need to clarify this by correspondence. May we do that, because I think there is some misunderstanding on numbers at the moment? Dr Kumar, if you could be brief, then we could move on.

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**Dr Kumar**

88. Earlier on Mr Jackson mentioned that the change involves very few jobs. Would you like to just tell us how many jobs this involves, this particular changeover?

(Dr Taylor) The current number of people employed at Daresbury on the Synchrotron is around 250-300. There has not yet been, because we are at a very early stage in the project, any detailed definition of how many people will be involved, for example, in running the new machine. It is very different technology, it is a very different scale of things and so on. So it is I think a very early stage to say exactly how many jobs will be associated with the new machine compared with what is associated with the current one.

Chairman: Well, we have come to the end—well, you will be pleased to know, I am sure, Dr Taylor that we have come to the end of the questions of the Synchrotron and its possible location, and I am sure Mr Byers will be even more pleased to know we have come to the end of those questions and you have answered them very ably this afternoon. We thank you for your help and we will just ask for one note about consultation and numbers. Now we come to the Joint Infra-structure Fund.

Dr Jones: Chairman, and how the groups are selected.

**Chairman**

89. And how the groups are selected. I think we only have three or four questions, but before those questions are asked, would it be helpful—we think it would be helpful—if you could just bring us up to date, Dr Taylor, on the Joint Infra-structure Fund and what has happened in the 10 months since we last met you?

(Dr Taylor) You will probably have known that this week we announced a further £320 million of JIF grants from Government and Wellcome Trust from the Round 2 process. That was for about 45 projects in 27 universities across the United Kingdom. In Round 1 we allocated about £150 million, so that makes a total of about £470 million allocated so far out of a fund of £750 million, just over 60 percent which is just about where we expected to be. I think it has been across a very broad spectrum of—what I can genuinely say—of alpha plus science groups from atmospheric research, to bio-science, mathematics, to chemistry and so on. It has been across a very wide range of size of projects from under £1 million to tens of millions. It has been across a range of institutions and again I think very well spread geographically around regions and countries. As Chairman of the Joint Executive Committee, I have been very pleased with both the quality and the diversity of the things that have come forward. I think what has happened to date has been very good news for UK science. We have, I think, been able to put in place really high quality facilities and that is crucial for recruiting and retaining the best people and without the best people the rest of it falls. One particular facet that I think has been interesting has been that many of the projects are about facilitating multi-disciplinary working. They are about a new building to bring together people from several

disciplines or a major new facility that will enable a lot of different people to work together and again I think that is a feature of much modern science, that actually the work is done by people in different disciplines working together in ways they had not expected. So I am very pleased about that.

Chairman: Good. Dr Turner?

**Dr Turner**

90. We have a two-channel review process here. Firstly, are you satisfied that it is working? Are you satisfied that each side—the Research Councils and the Wellcome Trust—are actually working to the same criteria?

(Dr Taylor) I think I am as satisfied as anyone could be. We have worked very hard in the Joint Executive Committee and in the International Scientific Advisory Board, Research Councils Advisory Board to do the kind of normalisation across the groups, the disciplines, the people. This is a fairly imprecise process. There are no very hard, clear boundaries—they are fuzzy—but I think we have been offered such a large number of really first class bids that I think we have actually managed to work pretty well across all of those different groups.

91. The number of bids I guess is something of a problem because they have not all been successful. It has cost the universities a lot to put the bids together, so do you think that money has been well spent, given that they have failed and do you think that there might have been fewer unsuccessful bids entered if the universities had had clearer guidance about the criteria that was going to be used in selecting the winning bids?

(Dr Taylor) Let me take those one by one. I do not think much money has been wasted. There was an initial adjustment to the procedures, particularly from the Wellcome Trust side, where we said: "Please do not do as much preparation beforehand. We will do a lot of the detailed negotiation with you afterwards if you are successful." That is one of the reasons why this week, for example, we were not able to announce actual amounts for each of the grants because in those cases we are in the process of beginning negotiation about what the actual award ought to be, to relieve the universities of the need to do a lot of detailed work beforehand. It has been quite interesting to me going around, hearing from numbers of institutions now, that even though they did not actually win the bid, the fact that these proposals had been made has been a very important catalysis, if you like, for the institution to think about its future and to think about its priorities and I think there will actually be a lot of spin-off from the fact that people have actually articulated these things and are now starting to talk about what they are going to do next. I do not think there was much doubt about the criteria; it was made very clear at the beginning of the whole process that the criteria was scientific excellence and that what was going to count was the peer review of the science done and likely to be done by the groups and I do not think anybody has been in any doubt about that.

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Dr Turner Cont]**

92. How many new universities have been the recipients of JIF awards and is there any correlation with RAE gradings and the actual outcomes of the JIF awards?

(Dr Taylor) I think on the first question, I think there are none at the moment. The correlation with RAE ratings is, if it exists, not by design. What we have asked all of the peer review groups to do is to review the science—

93. On the merits of the proposal?

(Dr Taylor) Just on the merits of the proposal. We have not sat there and started filtering against RAE ratings or anything like that. We have just taken the merits of the proposal.

94. What was the outcome? You cannot see a clear correlation?

(Dr Taylor) I have not actually done the analysis, to be honest, but again we could give you that information if you wished. I would expect there to be a high correlation.

**Dr Jones**

95. How clear are the arrangements for the running costs of the new equipment and facilities through JIF after the JIF grant has ended and are there any different arrangements for the two awarding channels?

(Dr Taylor) We, I think, have been very strict in saying to people that what we are providing to people is capital for renewal or replacement of infrastructure, whether it is buildings or equipment, and that we do not supply running costs. So the running cost implications of JIF provided equipment is entirely the responsibility of the institution.

96. We heard that when we visited the research councils, the research councils had been quite careful about including running costs in the future and have committed themselves, whereas this has not been the case with the Wellcome channel. Are you aware of that?

(Dr Taylor) I am not quite sure what you mean?

97. We were told that when people put forward bids for JIF through the research councils' channel, consideration was given to how future running costs were going to be financed, whereas that is not the case with Wellcome?

(Dr Taylor) I see. I hope what you were told is that it was made clear to people that the running costs were not provided by the JIF programme and there had been considerable debate about, for example, where do technicians come from if they are involved in these things? Basically JIF is a capital programme; it is not a recurrent expenditure programme. People may have been very explicit to grantholders that they do have to make their own provision.

98. But in making decisions on the award, surely you should take into account the ability to ensure that there is going to be future finance for running costs?

(Dr Taylor) I think our responsibility is primarily to make it very clear that the running costs for facilities like that need to come from wherever they came from before. The whole notion behind JIF is not to create new research volume. It is to replace a

building with another building. It is to provide a new piece of equipment that replaces obsolete equipment so we are very careful to say to, certainly research council grantholders, that this JIF award does not represent an increase in volume for research. It replenishes and renews your infrastructure for your current groups.

**Dr Kumar**

99. Are you satisfied that there is enough funding for the JIF to make the UK universities adequately equipped to perform internationally compared to research?

(Dr Taylor) I think the short answer to that is, it is a start. The level of demand that has come from the JIF process is, as you know, very high. Some care is needed in interpreting that because JIF did not, for example, require any applicants to find matching funds or any of the other usual provisos that go along. So I would imagine that the level of demand we have seen, if it is to be taken as an indicator, is rather an upper limit than a lower limit. But clearly there is much more there than we can satisfy from the current JIF fund. I am, I think, quite confident that the money that is going to be allocated from the JIF fund will make a huge difference to the ability of many groups to do first class research.

**Dr Williams**

100. Has there been any bias towards biological rather than physical sciences? It was one of our concerns with the arrangement that there would be too much for biological. In the first Round it was just £30 million biological out of the £150 million. In today's announcements, what is the balance between the two halves?

(Dr Taylor) I think it is adequate.

101. Without quoting a number, could you—

(Dr Taylor) Well, it is actually quite hard to do. For example, one of the things that we have said is that the Wellcome Trust money can only fund things within the Wellcome Trust charter. That does not mean that things within that charter will not also get funded from the Research Council side. So some of the Research Council provided funds have gone into life sciences. There are other areas where fundamental underpinning science, which is applicable to both bio-sciences and physical sciences, is being funded by both sides. So it is actually quite difficult to be any clearer.

102. Are you working on a son-of-JIF? That is, after the 2½ years, and as part of the Comprehensive Spending Review, there is a regular plea for £100 or £300 million, or whatever it is, a year for infrastructure in higher education. Are you working on this, or is Wellcome or other companies perhaps involved in something to follow JIF?

(Dr Taylor) On the former, yes. Of course we are looking quite carefully in the context of the spending review at what might need to happen when the JIF programme is over. I have not seen any indications so far that the Wellcome Trust, for example, is offering to become involved in an ongoing systematic process, but again that is question for them, I think.

8 December 1999]

DR JOHN TAYLOR, OBE AND MR MARTIN EARWICKER

[Continued]

**[Dr Williams Cont]**

103. Other companies?

*(Dr Taylor)* I am not aware of offers at this stage.**Chairman:** Two very quick, final questions. I hope they are quick anyway. Mr Taylor, Mr Beard and then we must conclude.**Mr Taylor**

104. Well, my question is brief. First of all I would like to congratulate the Government on this exercise. I hope you will accept also that it is slight son-of-the-Research Equipment exercise that I started in 1996?

*(Dr Taylor)* I do.

105. But it is a very big son is all I can say, because the sums of money are disproportionate, although ours were very important. The second thing is, it is clearly creating regional centres of excellence which of course, where it is appropriate to do so, could be anywhere in the United Kingdom?

*(Dr Taylor)* That is right.

106. Edinburgh, for example, in computing and their massively parallel computing centre and now they have quantum cryo-dynamics computing in addition. The quick question was about the Higher Education Funding Council because when I started this exercise in 1996, that was a real breakthrough because they had never provided money to be managed by the Office of Science and Technology. Are they still sanguine about that, are they keen to put even more money in this exercise and how long will they continue to do that?

*(Dr Taylor)* Well, first of all let me reinforce that the JREI is a very important thread and it continues and again we have just done a whole set of other things in that arena. I have been very pleased personally with the partnership we have had with the Funding Councils, the Funding Council for England, but also we have an ongoing dialogue with Scotland and Wales as well and I think again we are involved in very active discussions about starting from the viewpoint that I think, certainly in the case of the English Funding Council, they are interested in understanding how to follow on. But as you can imagine, there is a lot of debate going on at the moment—and again that is probably a question for them—but I think the overall climate is one in which we have worked very well together and we are certainly talking very well together about the future ongoing needs of the research community.**Mr Beard**

107. When the Committee visited the Research Councils in July, we were told that many of the unsuccessful bids were really very good projects and that the total was £800 million that had been bid for

and although very generous, the amount funded was much less than that. Does that imply that the attempt to catch up with the dereliction in universities that was the spur of JIF is not really keeping up, or is that a false interpretation of those figures?

*(Dr Taylor)* I think the current situation is, as I said, about £470 million awarded out of a demand of probably about £1.8 billion or thereabouts. I think that is actually keeping up quite well in one sense—that is not a very bad success rate—but clearly there is a lot of further demand in the pipeline and how that is dealt with is something that needs to be considered.

108. It must mean that there are an awful lot of assets that are not being renewed at that rate, does it not, just by arithmetic?

*(Dr Taylor)* That are not being renewed immediately? That is right.**Chairman**

109. Well, we have over-run by quite a long period of time and I am very grateful to you, Dr Taylor, and to you, Mr Earwicker, for your indulgence in this matter. We did say we would try to finish between 5.15pm and 5.30pm and when I asked you if we could go on to 5.30pm, you said you were at our disposal and I am afraid we took you rather literally; it is now 5.45pm. Dr Taylor, thank you very much for coming to see us again. It has been a very helpful session. In your capacity, of course, it is the normal course of events that we would welcome seeing you perhaps annually, but this year, in your first full year, we have actually seen you twice and on each occasion you have been very helpful to us. May I say to Mr Earwicker that we are grateful to have him with us as well for the moral support that he undoubtedly brought. I think, Mr Earwicker, you were long stop, but Dr Taylor turned out to be such a good wicket keeper that there was not a single ball that came down to you, but we were very pleased to have you here and thank you very much and perhaps we can have some private conversations with you on another occasion.

*(Mr Earwicker)* Absolutely.**Chairman:** Gentlemen, we are very grateful to you both. Thank you very much for the help you have given the Committee.





**Published by The Stationery Office Limited**

and available from:

**The Publications Centre**

(Mail, telephone and fax orders only)

PO Box 276, London SW8 5DT

General enquiries *Lo-call* 0845 7 585463

Order through the Parliamentary Hotline *Lo-call* 0845 7 023474

Fax orders 0870 600 5533

Email orders [book.orders@theso.co.uk](mailto:book.orders@theso.co.uk)

**The Stationery Office Bookshops**

123 Kingsway, London WC2B 6PQ

020 7242 6393 Fax 020 7242 6394

68-69 Bull Street, Birmingham B4 6AD

0121 236 9696 Fax 0121 236 9699

33 Wine Street, Bristol BS1 2BQ

0117 9264306 Fax 0117 9294515

9-21 Princess Street, Manchester M60 8AS

0161 834 7201 Fax 0161 833 0634

16 Arthur Street, Belfast BT1 4GD

028 9023 8451 Fax 028 9023 5401

The Stationery Office Oriel Bookshop

18-19 High Street, Cardiff CF1 2BZ

029 2039 5548 Fax 029 2038 4347

71 Lothian Road, Edinburgh EH3 9AZ

0870 606 5566 Fax 0870 606 5588

**The Parliamentary Bookshop**

12 Bridge Street, Parliament Square

London SW1A 2JX

Telephone orders 020 7219 3890

General enquiries 020 7219 3890

Fax orders 020 7219 3866

**Accredited Agents**

(see Yellow Pages)

and through good booksellers

© *Parliamentary Copyright House of Commons* 2000

*Applications for reproduction should be made in writing to the Copyright Unit,*

*Her Majesty's Stationery Office, St Clements House, 2-16 Colegate, Norwich NR3 1BQ*

*- Fax 01603 723000*

Her Majesty's Stationery Office is independent of and separate from the company now trading as  
The Stationery Office Ltd., which is responsible for printing and publishing House publications

ISBN 0-10-206200-5



9 780102 062007